09/783031

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     (FILE 'HOME' ENTERED AT 11:52:03 ON 30 NOV 2001)

     FILE 'HCAPLUS' ENTERED AT 11:52:09 ON 30 NOV 2001
L1         23988 S SUPERCRITICAL
L2        607109 S TRIGLYCERIDE OR GLYCERIDE FAT OR OIL
L3        698309 S CATALYST
L4         49626 S NICKEL AND L3
L5            18 S L1 AND L2 AND L4

     FILE 'STNGUIDE' ENTERED AT 11:54:23 ON 30 NOV 2001

     FILE 'HCAPLUS' ENTERED AT 12:00:01 ON 30 NOV 2001
L6             1 S ES2124166/PN
L7           138 S L1 AND L2 AND L3
L8            16 S L7 AND (ALCOHOL OR MONOALCOHOL OR MONO-ALCOHOL)
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L5 ANSWER 1 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 2001:615572 HCAPLUS
DN 135:182359
TI Process for producing fatty acid esters and fuels comprising fatty acid ester
IN Tateno, Tatsuo; Sasaki, Toshio
PA Sumitomo Chemical Company, Limited, Japan
SO Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM C11C003-00
ICS C10L001-18; C07C067-03; B01J003-00
CC 45-3 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1126011	A2	20010822	EP 2001-1103503	20010215
	EP 1126011	A3	20010829		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001226694	A2	20010821	JP 2000-39318	20000217
	JP 2001302584	A2	20011031	JP 2001-41393	20010219
PRAI	JP 2000-39316	A	20000217		
	JP 2000-39318	A	20000217		

AB The process for producing a fatty acid ester with a high yield from an **oil** or fat (soybean **oil**) and an alc. (MeOH) which comprises reacting an **oil** or fat with an alc. in the presence of a solid base **catalyst** (anhyd. Na carbonate) under conditions in which .gtoreq.1 of the **oil** or fat and the alc. is in a **supercrit**. state at a temp. >260.degree.C.
ST soybean **oil** ester fuel; sodium carbonate **catalyst** fatty acid ester; **supercrit** state fatty acid ester
IT Fatty acids, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(esters; process for producing fatty acid esters and fuels comprising fatty acid ester)
IT Fuels
Supercritical phenomena
(process for producing fatty acid esters and fuels comprising fatty acid ester)
IT Soybean **oil**
RL: IMF (Industrial manufacture); PREP (Preparation)
(reaction products with alcs.; process for producing fatty acid esters and fuels comprising fatty acid ester)
IT 471-34-1, Calcium carbonate, uses 497-19-8, Sodium carbonate, uses 1305-62-0, Calcium hydroxide, uses 1305-78-8, Calcium oxide, uses 1309-48-4, Magnesium oxide, uses 1313-99-1, **Nickel** oxide, uses
RL: CAT (Catalyst use); USES (Uses)
(process for producing fatty acid esters and fuels comprising fatty acid ester)
IT 67-56-1DP, Methanol, reaction products with **oil** and fat
RL: IMF (Industrial manufacture); PREP (Preparation)
(process for producing fatty acid esters and fuels comprising fatty acid ester)

L5 ANSWER 2 OF 18 HCAPLUS COPYRIGHT 2001 ACS

AN 2001:603741 HCAPLUS
DN 135:182358
TI Manufacture of fatty acid esters and fuel containing the fatty acid esters
IN Tateno, Tatsuo; Sasaki, Toshio
PA Sumitomo Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C11C003-10
ICS B01J023-755; C07B061-00; C07C067-03; C07C069-58; C10L001-02; C10L001-08; C10L001-18; C10M105-34; C11B013-00; C10N040-25
CC 45-3 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 51
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001226694	A2	20010821	JP 2000-39318	20000217
	EP 1126011	A2	20010822	EP 2001-1103503	20010215
	EP 1126011	A3	20010829		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 2001042340	A1	20011122	US 2001-783031	20010215
PRAI	JP 2000-39316	A	20000217		
	JP 2000-39318	A	20000217		

OS MARPAT 135:182358
AB The esters useful fuels, diesel fuels, lube **oil** base or fuel additives are manufd. by reacting **oils** and fats with alcs. using an Ni-contg. solid **catalyst** under **supercrit.** condition. Heating 0.861 g soya **oil,** 1.242 g MeOH, and 10.9 mg NiO-Ni2O3 mixt. in a stainless reactor at 300.degree. for 10 min gave 98% yield soya fatty acid Me esters and 91% yield glycerol.
ST fatty acid ester manuf fuel; **nickel catalyst** fat **oil** transesterification; soya fatty acid Me ester manuf
IT Lubricating **oils**
(base; manuf. of fatty acid esters and fuel contg. the fatty acid esters)
IT Fatty acids, preparation
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(esters; manuf. of fatty acid esters and fuel contg. the fatty acid esters)
IT Diesel fuel
Fuel additives
Fuels
Transesterification **catalysts**
(manuf. of fatty acid esters and fuel contg. the fatty acid esters)
IT Alcohols, reactions
Soybean **oil**
RL: RCT (Reactant)
(manuf. of fatty acid esters and fuel contg. the fatty acid esters)
IT Wastes
(**oil**, reactants; manuf. of fatty acid esters and fuel contg. the fatty acid esters)
IT Fats and Glyceridic **oils,** reactions
RL: RCT (Reactant)
(**oils**; manuf. of fatty acid esters and fuel contg. the fatty

acid esters)
IT   Fatty acids, preparation
     RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
        (soya, Me esters; manuf. of fatty acid esters and fuel contg. the fatty
        acid esters)
IT   56-81-5P, Glycerol, preparation
     RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
        (manuf. of fatty acid esters and fuel contg. the fatty acid esters)
IT   67-56-1, Methanol, reactions
     RL: RCT (Reactant)
        (manuf. of fatty acid esters and fuel contg. the fatty acid esters)
IT   1313-99-1, **Nickel** oxide, uses   1314-06-3, **Nickel** trioxide
     RL: CAT (Catalyst use); USES (Uses)
        (transesterification **catalysts**; manuf. of fatty acid esters and fuel contg. the fatty acid esters)

L5   ANSWER 3 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN   2001:409893 HCAPLUS
DN   135:197151
TI   **Nickel**-alumina composite aerogels as liquid-phase hydrogenation **catalysts**
AU   Suh, D. J.; Park, T.-J.; Lee, S.-H.; Kim, K.-L.
CS   Clean Technology Research Center, Korea Institute of Science and Technology, Cheongryang, Seoul, 136-791, S. Korea
SO   J. Non-Cryst. Solids (2001), 285(1-3), 309-316
     CODEN: JNCSBJ; ISSN: 0022-3093
PB   Elsevier Science B.V.
DT   Journal
LA   English
CC   45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
AB   Mesoporous and well-dispersed **nickel**-alumina composite aerogels with high surface area have been prepd. by CO2 **supercrit**. drying of alcogels obtained by the fast sol-gel process. They were evaluated as **catalysts** in a batch reactor for the liq.-phase hydrogenation of benzophenone and soybean **oil** and showed excellent activity and accessibility of the metal particles. They were also characterized by nitrogen adsorption-desorption, X-ray diffraction (XRD), XPS (XPS), and transmission electron microscopy (TEM) to explain their excellent catalytic performance in comparison with other alumina-supported **nickel catalysts**.
ST   **nickel** alumina aerogel liq phase hydrogenation **catalyst** ; benzophenone soybean **oil** hydrogenation
IT   Soybean **oil**
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (hydrogenated; **nickel**-alumina composite aerogels as liq.-phase hydrogenation **catalysts** of soybean **oil**)
IT   Sol-gel processing
        (in prepn. of **nickel**-alumina composite aerogels as liq.-phase hydrogenation **catalysts**)
IT   Hydrogenation **catalysts**
        (liq.-phase; **nickel**-alumina composite aerogels as liq.-phase hydrogenation **catalysts**)
IT   Aerogels
        (**nickel**-alumina composite aerogels as liq.-phase

hydrogenation **catalysts**)
IT Soybean **oil**
RL: RCT (Reactant)
(**nickel**-alumina composite aerogels as liq.-phase
hydrogenation **catalysts** of soybean **oil**)
IT Microstructure
Pore size
Surface area
X-ray photoelectron spectra
(of **nickel**-alumina composite aerogels as liq.-phase
hydrogenation **catalysts**)
IT 373-02-4, **Nickel** acetate
RL: CAT (Catalyst use); USES (Uses)
(in sol-gel process with aluminum sec-butoxide; **nickel**
-alumina composite aerogels as liq.-phase hydrogenation
catalysts)
IT 2269-22-9
RL: CAT (Catalyst use); USES (Uses)
(in sol-gel process with **nickel** acetate; **nickel**
-alumina composite aerogels as liq.-phase hydrogenation
catalysts)
IT 13138-45-9, **Nickel** nitrate
RL: CAT (Catalyst use); USES (Uses)
(**nickel**-alumina composite aerogels as liq.-phase
hydrogenation **catalysts**)
IT 119-61-9, Benzophenone, reactions
RL: RCT (Reactant)
(**nickel**-alumina composite aerogels as liq.-phase
hydrogenation **catalysts** for benzophenone)
IT 91-01-0P, Benzhydrol
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)
(**nickel**-alumina composite aerogels as liq.-phase
hydrogenation **catalysts** for benzophenone)
IT 101-81-5P, Diphenylmethane
RL: SPN (Synthetic preparation); PREP (Preparation)
(**nickel**-alumina composite aerogels as liq.-phase
hydrogenation **catalysts** for benzophenone)
IT 1344-28-1, .gamma.-Alumina, uses
RL: CAT (Catalyst use); USES (Uses)
(.gamma.- **catalyst** support; **nickel**-alumina
composite aerogels as liq.-phase hydrogenation **catalysts**)
RE.CNT 11
RE

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(2) Coenen, J; Ind Eng Chem Fundam 1986, V25, P43 HCAPLUS
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L5 ANSWER 4 OF 18 HCAPLUS
AN 2001:169729 HCAPLUS
DN 134:352501

TI Hydrogenation of vegetable **oils** using mixtures of **supercritical** carbon dioxide and hydrogen

AU King, Jerry W.; Holliday, Russell L.; List, Gary R.; Snyder, Janet M.

CS Food Quality and Safety Research Unit, NCAUR, ARS, USDA, Peoria, IL, 61604, USA

SO J. Am. Oil Chem. Soc. (2001), 78(2), 107-113
CODEN: JAOCA7; ISSN: 0003-021X

PB AOCS Press

DT Journal

LA English

CC 17-9 (Food and Feed Chemistry)

AB Hydrogenation of vegetable **oils** under **supercrit**. conditions can involve a homogeneous one-phase system, or alternatively 2 **supercrit**. components in the presence of a condensed phase consisting of **oil** and a solid **catalyst**. The former operation is usually conducted in flow reactors while the latter mode is more amenable to stirred, batch-reactor technol. Although many advantages have been cited for the 1-phase hydrogenation of **oils** or oleochems. using **supercrit**. carbon dioxide or propane, its ultimate productivity is limited by the **oil** soly. in the **supercrit**. fluid phase as well as unconventional conditions that affect the hydrogenation. In this study, a dead-end reactor has been utilized in conjunction with a head-space consisting of either a binary fluid phase consisting of varying amts. of carbon dioxide mixed with hydrogen or neat hydrogen for comparison purposes. Reaction pressures up to 2000 psi and temps. in the range of 120-140.degree.C have been utilized with a conventional **nickel catalyst** to hydrogenate soybean **oil**. Depending on the chosen reaction conditions, a wide variety of end products can be produced having different iodine values, percentage trans fatty acid content, and dropping points or solid fat indexes. Although addn. of carbon dioxide to the fluid phase contg. hydrogen retards the overall reaction rate in most of the studied cases, the majority of products have low trans fatty acid content, consistent with a nonselective mode of hydrogenation.

ST vegetable **oil** hydrogenation **supercrit** carbon dioxide

IT **Catalysts**
(hydrogenation of vegetable **oils** using mixts. of **supercrit**. carbon dioxide and hydrogen)

IT Soybean **oil**
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(hydrogenation of, using mixts. of **supercrit**. carbon dioxide and hydrogen)

IT Hydrogenation
(of vegetable **oils** using mixts. of **supercrit**. carbon dioxide and hydrogen)

IT Extraction
(**supercrit**.; hydrogenation of vegetable **oils** using mixts. of **supercrit**. carbon dioxide and hydrogen)

IT Fatty acids, biological studies
RL: BOC (Biological occurrence); BIOL (Biological study); OCCU (Occurrence)
(unsatd., trans-; hydrogenation of vegetable **oils** using mixts. of **supercrit**. carbon dioxide and hydrogen)

IT Fats and Glyceridic **oils**, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(vegetable; hydrogenation of, using mixts. of **supercrit**.

carbon dioxide and hydrogen)
IT 12408-02-5, Hydrogen ion, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(hydrogenation of vegetable **oils** using mixts. of **supercrit**. carbon dioxide and)
IT 124-38-9, Carbon dioxide, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(hydrogenation of vegetable **oils** using mixts. of **supercrit**. carbon dioxide and hydrogen)
RE.CNT 25
RE
(1) Albright, L; Hydrogenation; Proceedings of an AOCS Colloquium 1987, P12
(2) Albright, L; J Am Oil Chem Soc 1962, V39, P14 HCAPLUS
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L5 ANSWER 5 OF 18 HCAPLUS
AN 2000:28872 HCAPLUS
DN 132:66387
TI Applicability of **supercritical** water as a reaction medium for desulfurization and demetallization of gas **oil**
AU Vogelaar, B. M.; Makkee, M.; Moulijn, J. A.
CS Section Industrial Catalysis, Department of Chemical Process Technology, Faculty of Applied Sciences, Delft University of Technology, Delft, 2628 BL, Neth.
SO Fuel Process. Technol. (1999), 61(3), 265-277
CODEN: FPTEDY; ISSN: 0378-3820
PB Elsevier Science B.V.

DT Journal
LA English
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
AB In this study, the potential of **supercrit.** water (SCW) was investigated, to remove sulfur and metals from gas **oil,** either sep. or simultaneously. The expts. were carried out in a stirred batch autoclave at 673 K and 25 MPa, using a std. hydrotreated gas **oil** spiked with different sulfur-, **nickel**- and vanadium-contg. model compds. Only non-arom. sulfur compds. will react in SCW. The obsd. degree of desulfurization is marginal. Arom. sulfur compds. are too stable and will not react. Demetallization of selected metal complexes was not obsd. The metal complexes undergo some rearrangements in SCW, but their basic structure remains intact. Desulfurization and demetallization were only obsd. in the presence of a conventional hydrotreating **catalyst**. Concluding, SCW alone is not a suitable reaction medium for desulfurization and/or demetallization of gas **oil**. This conclusion is supported by thermodynamical calcns.
ST gas **oil** desulfurization demetallization **supercrit** water
IT Petroleum refining
(demetalation; **supercrit**. water as a reaction medium for desulfurization and demetallization of gas **oil**)
IT Petroleum refining
(desulfurization; **supercrit**. water as a reaction medium for desulfurization and demetallization of gas **oil**)
IT Gas **oils**
(**supercrit**. water as a reaction medium for desulfurization and demetallization of gas **oil**)
IT 7732-18-5, Water, uses
RL: ARG (Analytical reagent use); ARU (Analytical role, unclassified); ANST (Analytical study); USES (Uses)
(**supercrit**. water as a reaction medium for desulfurization and demetallization of gas **oil**)
RE.CNT 15
RE
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(4) Katritzky, A; Energy and Fuels 1990, V4, P577 HCAPLUS
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L5 ANSWER 6 OF 18 HCAPLUS

AN 1999:687344 HCAPLUS
DN 132:22223
TI Hydrogenation of edible **oil**
AU Takahashi, Yoshikazu; Yoda, Minoru
CS Miyoshi Oil & Fat Co., Ltd., Horikiri, Katsushika-ku, Tokyo, 124-8510, Japan
SO Nihon Yukagakkaishi (1999), 48(10), 1141-1149
CODEN: NIYUFC; ISSN: 1341-8327
PB Nihon Yukagaku Gakkai
DT Journal; General Review
LA Japanese
CC 17-0 (Food and Feed Chemistry)
AB A review with 36 refs. The hydrogenation of edible **oil** is a basic means for converting liq. **oils** into plastic fats at **oil** and fat companies. Fundamental hydrogenation and current continuous reactor using a fixed-bed **catalyst** and **supercrit**. process are discussed. New types of **nickel** and precious metal **catalysts** and current developments in reactors are presented.
ST review edible **oil** fat hydrogenation
IT Fats and Glyceridic **oils,** biological studies
RL: FFD (Food or feed use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
(hydrogenated; hydrogenation of edible **oil**)
IT Food processing
Hydrogenation
(hydrogenation of edible **oil**)
IT Edible **oils**
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(hydrogenation of edible **oil**)

L5 ANSWER 7 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:618420 HCAPLUS
DN 131:288550
TI Deactivation of NiMo/.gamma.-Al2O3 **catalysts** for hydrodesulfurization of heavy **oil**
AU Su, Ji-xin; Xiao, Tian-cun; Wang, Hai-tao; Yin, Yong-quan; Lu, Yu-li; Yang, Zhao-he
CS Department of Environmental Engineering, Shandong University, Jinan, 250100, Peop. Rep. China
SO Fenzi Cuihua (1999), 13(4), 297-303
CODEN: FECUEN; ISSN: 1001-3555
PB Kexue Chubanshe
DT Journal
LA Chinese
CC 51-6 (Fossil Fuels, Derivatives, and Related Products)
AB Spent industrial **catalyst** samples for hydrodesulfurization (HDS) of heavy **oil** were collected and treated by ultrasonic washing and **supercrit**. fluid extn. The samples were characterized by mean of various techniques: TPO-MS, TG, DTA, SEM-EDS, x-ray diffraction and TPR, and the reasons for the deactivation of the **catalyst** were studied. It's shown that, deposited carbon and deposited metals on the **catalysts** were the main factors resulting in the deactivation, and state of the active elements on the **catalysts** can be restored and improved by removing the deposited carbon and deposited metals. The method used to unload the deactivated **catalysts** from industrial reactor also has some effect on their

chemicophys. properties.
ST deactivation molybdenum **nickel** alumina **catalyst**
hydrodesulfurization
IT Decoking
Hydrodesulfurization
Hydrodesulfurization **catalysts**
(deactivation of NiMo/.gamma.-Al2O3 **catalysts** for
hydrodesulfurization of heavy **oil**)
IT 1344-28-1, Alumina, uses 7439-98-7, Molybdenum, uses 7440-02-0,
Nickel, uses
RL: CAT (Catalyst use); USES (Uses)
(deactivation of NiMo/.gamma.-Al2O3 **catalysts** for
hydrodesulfurization of heavy **oil**)
IT 7440-44-0, Carbon, reactions
RL: FMU (Formation, unclassified); RCT (Reactant); REM (Removal or
disposal); FORM (Formation, nonpreparative); PROC (Process)
(deactivation of NiMo/.gamma.-Al2O3 **catalysts** for
hydrodesulfurization of heavy **oil**)

L5 ANSWER 8 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:524973 HCAPLUS
DN 131:173666
TI Sol-gel synthesis and characterization of various oxide aerogels and NiO
and Pd supported on aerogels
AU Knez, Zeljko; Novak, Z.
CS Faculty Chemistry Chemical Engineering, Univ. Maribor, Maribor, SI-2000,
Slovenia
SO Wiss. Ber. - Forschungszent. Karlsruhe (1999), FZKA 6271, High Pressure
Chemical Engineering, 133-136
CODEN: WBFKF5; ISSN: 0947-8620
DT Report
LA English
CC 57-2 (Ceramics)
Section cross-reference(s): 66, 67
AB The prepn. and characterization of aerogels of metal oxides (SiO2, Al2O3,
and TiO2), binary mixed oxides (SiO2-Al2O3 and SiO2-TiO2), and various
NiO
aerogels (NiO-Al2O3, NiO-SiO2, and NiO-SiO2-Al2O3), and Pd aerogels
(Pd-Al2O3 and Pd-SiO2-Al2O3) is presented. The prepn. of aerogels
includes several steps: sol-gel synthesis, drying and, finally, thermal
treatment. Excellent properties of aerogels, obtained with the sol-gel
synthesis, were preserved with **supercrit**. drying with CO2. Due
to this fact, **supercrit**. drying was carried out at the
conditions above the binary crit. curve of the solvent - CO2, where the
solvent and CO2 are completely miscible. All produced aerogels were
characterized by N physisorption at 77 K, single point BET surface area
measurements (adsorption of Ar-N gas mixt.), x-ray diffraction, and
thermal anal.
ST silica alumina aerogel sol gel **supercrit** drying carbon oxide;
titania aerogel sol gel **supercrit** drying carbon oxide; palladium
nickel oxide aerogel support sol gel
IT Aerogels
Sol-gel processing
(sol-gel processing and characterization of various oxide aerogels and
NiO and Pd supported on aerogels)
IT Surface area
Thermal decomposition
(sol-gel processing and characterization of various oxide aerogels and

NiO and Pd supported on aerogels in relation to)
IT Hydrogenation **catalysts**
(sol-gel processing and characterization of various oxide aerogels and NiO and Pd supported on aerogels used as)
IT Soybean **oil**
RL: NUU (Nonbiological use, unclassified); USES (Uses)
(sol-gel processing and characterization of various oxide aerogels and NiO and Pd supported on aerogels used as hydrogenation **catalysts** of)
IT Drying
(**supercrit.**; sol-gel processing and characterization of various oxide aerogels and NiO and Pd supported on aerogels in relation to)
IT 7440-05-3, Palladium, properties
RL: CAT (Catalyst use); PRP (Properties); USES (Uses)
(sol-gel processing and characterization of various oxide aerogels and NiO and Pd supported on aerogels)
IT 1344-28-1, Aluminum oxide (Al2O3), processes 7631-86-9, Silica, processes 13463-67-7, Titania, processes 52337-09-4, Silicon titanium oxide 159995-97-8, Aluminum silicon oxide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(sol-gel processing and characterization of various oxide aerogels and NiO and Pd supported on aerogels)
IT 1313-99-1, **Nickel** oxide (NiO), properties
RL: PRP (Properties)
(sol-gel processing and characterization of various oxide aerogels and NiO and Pd supported on aerogels)
IT 124-38-9, Carbon dioxide, uses
RL: NUU (Nonbiological use, unclassified); USES (Uses)
(sol-gel processing and characterization of various oxide aerogels and NiO and Pd supported on aerogels in relation to **supercrit.** drying with)
RE.CNT 14
RE

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L5 ANSWER 9 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:491579 HCAPLUS
DN 131:187128
TI Coking of Hydroprocessing **Catalyst** by Residue Fractions of Bitumen
AU Gray, Murray R.; Zhao, Yingxian; McKnight, Craig M.; Komar, David A.; Carruthers, J. Donald
CS Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB, T6G 2G6, Can.
SO Energy Fuels (1999), 13(5), 1037-1045
CODEN: ENFUEM; ISSN: 0887-0624
PB American Chemical Society
DT Journal
LA English
CC 51-10 (Fossil Fuels, Derivatives, and Related Products)
AB The deposition of org. material, or coke, on hydroprocessing **catalyst** was studied using Athabasca bitumen vacuum residue (ABVB) and narrow fractions of ABVB, prepd. by **supercrit**. fluid extn. (SCFE) with n-pentane. The feed materials were dild. in a low-sulfur gas **oil** and hydroprocessed over a com. Ni-Mo/.gamma.-Al2O3 **catalyst** in a 1 L continuous-stirred tank reactor at 440 .degree.C. The coked **catalysts** were Soxhlet extd. with methylene chloride; then, carbon content, surface area, pore vol., and pore size were measured. Hydrodesulfurization activity was then measured using bitumen and dibenzothiophene as reactants.The SCFE fractions that contained only sats., aroms., and resins gave a low yield of carbon on the **catalyst** (<7.5 wt %). The asphaltene-rich fraction gave higher coke yields, both on the **catalyst** and in the reactor, and a lower H/C ratio than the lighter fractions. In the worst case with asphaltene-rich feed, over half of the surface area and pore vol. of **catalyst** was lost due to coke deposition on the **catalyst** . HDS activity of the spent **catalyst** decreased monotonically with increasing carbon content on the **catalyst**. A portion of the carbonaceous material, or coke, on the **catalyst** was mobile and reactive at the conditions used for hydroprocessing of bitumen. The data suggested that this mobile adsorbed material had a significant impact on the obsd. activity of the **catalyst**.
ST hydroprocessing **catalyst** coking bitumen residue
IT Hydrodesulfurization
Petroleum hydrotreating **catalysts**
(coking of hydroprocessing **catalyst** by residue fractions of bitumen)
IT Asphaltenes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(coking of hydroprocessing **catalyst** by residue fractions of bitumen)
IT 7440-02-0, **Nickel**, uses
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(contg. molybdenum and alumina; coking of hydroprocessing **catalyst** by residue fractions of bitumen)
IT 7439-98-7, Molybdenum, uses
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(contg. **nickel** and alumina; coking of hydroprocessing

catalyst by residue fractions of bitumen)

IT 132-65-0, Dibenzothiophene
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(hydrodesulfurization activity of coked hydroprocessing
catalyst)

RE.CNT 16

RE
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L5 ANSWER 10 OF 18 HCAPLUS
AN 1998:760096 HCAPLUS
DN 130:15125
TI Method for continuous catalytic reaction of organic compounds
IN Tacke, Thomas; Roeder, Stefan; Beul, Inge; Laporte, Steffen
PA Degussa A.-G., Germany
SO Ger. Offen., 16 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM C07B035-02
ICS C07C053-126; C07C051-36; C07C069-22; C07C069-24; C07C069-30;
C07C067-303; C07C067-02; C07C067-08; C11C003-12; C07B041-12
ICA C07B041-06; C07B037-04
CC 45-3 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 48
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19719431	A1	19981119	DE 1997-19719431	19970512
	EP 878534	A2	19981118	EP 1998-104688	19980316
	EP 878534	A3	20000202		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6316646	B1	20011113	US 1998-73810	19980507
	JP 10316592	A2	19981202	JP 1998-128678	19980512
PRAI	DE 1997-19719431	A	19970512		

AB The process, esp. for hydrogenation of fats and their derivs., involves extn. of reactants from an impure feed with a condensed fluid (e.g., **supercrit**. CO_2), passage of the ext. over a **catalyst** under reaction conditions, sepn. of the products from the unchanged reactants and extractant, and recycle of the latter. Thus, a crude fatty

acid mixt. was extd. into 27:5 CO2-propane at 80.degree./200 bars and the ext. was passed over a **catalyst** of Pd supported on a functionalized polysiloxane at 140-190.degree./200 bars (temp. increasing in stages to compensate for loss of **catalyst** activity) and liq. hourly space velocity .apprx.1 for .apprx.240 h to produce fatty acids with I no. 1-2 at a throughput of .apprx.800 g/g **catalyst**.

ST fatty acid continuous hydrogenation; liquefied gas medium hydrogenation fat

IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
(C1-6, solubilizers; continuous catalytic reaction of org. compds.)

IT Platinum-group metals
RL: CAT (Catalyst use); USES (Uses)
(**catalysts**; continuous catalytic hydrogenation of org. compds.)

IT Hydrogenation
(continuous catalytic hydrogenation of org. compds.)

IT Fats and Glyceridic **oils**, reactions
Fatty acid esters
Fatty acids, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process)
(continuous catalytic hydrogenation of org. compds.)

IT Extraction
(continuous catalytic reaction of org. compds. after)

IT 7440-02-0, **Nickel**, uses 7440-05-3, Palladium, uses
7440-50-8, Copper, uses
RL: CAT (Catalyst use); USES (Uses)
(**catalysts**; continuous catalytic hydrogenation of org. compds.)

IT 544-35-4, Ethyl linoleate
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process)
(continuous catalytic hydrogenation of org. compds.)

IT 74-84-0, Ethane, uses 74-98-6, Propane, uses 106-97-8, Butane, uses
124-38-9, Carbon dioxide, uses 10024-97-2, Nitrogen oxide (N2O), uses
RL: NUU (Nonbiological use, unclassified); USES (Uses)
(liquefied, extractant; continuous catalytic reaction of org. compds.)

IT 67-64-1, Acetone, uses
RL: MOA (Modifier or additive use); USES (Uses)
(solubilizer; continuous catalytic reaction of org. compds.)

L5 ANSWER 11 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 1998:552505 HCAPLUS
DN 129:247395
TI Characteristics on HDS and HDN kinetics of narrow fractions from residua
AU Yang, Chaohe; Du, Feng; Xu, Chunming
CS State Key Laboratory of Heavy Oil Processing, University of Petroleum, Dongying city, 257062, Peop. Rep. China
SO Prepr. Symp. - Am. Chem. Soc., Div. Fuel Chem. (1998), 43(3), 751-757
CODEN: PSADFZ
PB American Chemical Society, Division of Fuel Chemistry
DT Journal
LA English
CC 51-6 (Fossil Fuels, Derivatives, and Related Products)
AB An atm. residuum from Dagang crude of China(DGAR) and two vacuum residua from Arabian Light crude and Arabian Medium crude(SQVR and SZVR) were fractionated into 7-8 cuts by **supercrit**. fluid extn.

fractionation (SFEF) technique developed by State Key Lab. of Heavy **Oil** Processing. These SFEF fractions were catalytically hydroprocessed in a 100 mL autoclave with crushed com. Ni-Mo **catalyst**. The HDS and HDN diffusion-reaction model of residue in autoclave reactor was established. The diffusion and HDS and HDN characteristics of these fractions were discussed.

ST hydrodesulfurization hydrodenitrogenation kinetics narrow fraction; petroleum residue **supercrit** fluid extn

IT Diffusion
Hydrodesulfurization
Petroleum fractions
Petroleum hydrotreating **catalysts**
Petroleum refining residues
Physicochemical simulation
Reaction kinetics
Supercritical fluid extraction
(characteristics on HDS and HDN kinetics of narrow fractions from residua)

IT Petroleum refining
(hydrodenitrogenation; characteristics on HDS and HDN kinetics of narrow fractions from residua)

IT 7439-98-7, Molybdenum, uses 7440-02-0, **Nickel**, uses
RL: CAT (Catalyst use); USES (Uses)
(characteristics on HDS and HDN kinetics of narrow fractions from residua)

L5 ANSWER 12 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 1998:552504 HCAPLUS
DN 129:247394
TI Hydroconversion characteristics on narrow fractions of residua
AU Yang, Chaohe; Zhang, Jianfang; Xu, Chunming; Lin, Shixong
CS State Key Laboratory of Heavy Oil Processing, University of Petroleum, Dongying city, 257062, Peop. Rep. China
SO Prepr. Symp. - Am. Chem. Soc., Div. Fuel Chem. (1998), 43(3), 746-750
CODEN: PSADFZ
PB American Chemical Society, Division of Fuel Chemistry
DT Journal
LA English
CC 51-6 (Fossil Fuels, Derivatives, and Related Products)

AB An atm. residuum from Dagang crude of China(DGAR) and two vacuum residua from Arabian Light crude and Arabian Medium crude(SQVR and SZVR) were fractionated into 7-8 cuts by **supercrit**. fluid extn. fractionation (SFEF) technique developed by State Key Lab. of Heavy **Oil** Processing. The major properties of these fractions were measured, and each fraction was catalytically hydroprocessed in a 100 mL autoclave with crushed com. Ni-Mo **catalyst** at the same reaction conditions. Removal of sulfur and nitrogen decreases with increase of the av. mol. wt.(AMW) of the feedstock, but the total conversion of heavy portion greater than 500 for every fraction is similar. The yield of coke increases with increasing AMW of feed, esp. for the several heavier fractions, and the SFEF residue inhibits the HDS and HDN of other SFEF fractions to a certain extent.

ST hydroconversion narrow fraction residue **supercrit** extn

IT Hydrodesulfurization
Petroleum fractions
Petroleum refining residues

Supercritical fluid extraction
(hydroconversion characteristics on narrow fractions of residua)
IT Coke
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(hydroconversion characteristics on narrow fractions of residua)
IT Petroleum refining
(hydrodenitrogenation; hydroconversion characteristics on narrow fractions of residua)
IT 7439-98-7, Molybdenum, uses 7440-02-0, **Nickel**, uses
RL: CAT (Catalyst use); USES (Uses)
(hydroconversion characteristics on narrow fractions of residua)

L5 ANSWER 13 OF 18 HCAPLUS
AN 1997:670757 HCAPLUS
DN 127:295615
TI Catalytic hydrogenating desulfurization of heavy **oil** through partial oxidation in **supercritical** water
AU Adschiri, T.; Sato, T.; Shibata, R.; Arai, K.
CS Department Chemical Engineering, Tohoku University, Sendai, 980, Japan
SO DGMK Tagungsber. (1997), 9704(Proceedings ICCS '97, Volume 3), 1505-1508
CODEN: DGTAF7; ISSN: 1433-9013
PB Deutsche Wissenschaftliche Gesellschaft fuer Erdoel, Erdgas und Kohle
DT Journal
LA English
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
AB We show that the effective hydrogenating atm. can be supplied through the partial oxidn. of hydrocarbon in **supercrit.** water (SCW). We conducted expts. of dibenzothiophene (DBT) hydrogenation with NiMo/Al2O3 at 673 K and 30 MPa, in various atmospheres, using a tube bomb reactor. Higher conversion of DBT was obtained in CO-SCW, CO2-H2-SCW, HCOOH-SCW than in H2-SCW. These results clearly indicate that water-gas shift reaction (CO + H2O .fwdarw. CO2 + H2) in SCW produces the species which can hydrogenate DBT more effectively than H2 gas. Next, we conducted another expt. for partial oxidn. of DBT-hexylbenzene soln. in SCW, effective hydrogenation of DBT took place. This result is probably because CO forms through the partial oxidn. of hexylbenzene and converts to the hydrogenating species through water-gas shift reaction.
ST catalytic hydrogenating desulfurization heavy **oil** oxidn; **supercrit** water oxidn dibenzothiophene hydrogenating desulfurization; water gas shift reaction hydrogenating desulfurization
IT Desulfurization **catalysts**
Oxidation
Water gas shift reaction
(catalytic hydrogenating desulfurization of heavy **oil** through partial oxidn. in **supercrit.** water)
IT Heavy petroleum
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(catalytic hydrogenating desulfurization of heavy **oil** through partial oxidn. in **supercrit.** water)
IT Desulfurization
(hydrogenating; catalytic hydrogenating desulfurization of heavy **oil** through partial oxidn. in **supercrit.** water)
IT 630-08-0, Carbon monoxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(catalytic hydrogenating desulfurization of heavy **oil** through partial oxidn. in CO-**supercrit.** water system)
IT 1333-74-0, Hydrogen, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)

(catalytic hydrogenating desulfurization of heavy **oil** through
partial oxidn. in CO2-H2- and H2-**supercrit**. water system)

IT 124-38-9, Carbon dioxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(catalytic hydrogenating desulfurization of heavy **oil** through
partial oxidn. in CO2-H2-**supercrit**. water system)

IT 64-18-6, Formic acid, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(catalytic hydrogenating desulfurization of heavy **oil** through
partial oxidn. in HCO2H-**supercrit**. water system)

IT 1077-16-3, Hexylbenzene
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(catalytic hydrogenating desulfurization of heavy **oil** through
partial oxidn. in **supercrit**. water exemplified by
dibenzylthiophene soln. in)

IT 7439-98-7, Molybdenum, uses
RL: CAT (Catalyst use); USES (Uses)
(catalytic hydrogenating desulfurization of heavy **oil** through
partial oxidn. in **supercrit**. water with)

IT 7440-02-0, **Nickel**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalytic hydrogenating desulfurization of heavy **oil** through
partial oxidn. in **supercrit**. water with NiMo/Al2O3
catalyst)

IT 92-52-4P, Biphenyl, preparation 827-52-1P, Cyclohexylbenzene
RL: PNU (Preparation, unclassified); PREP (Preparation)
(major product in catalytic hydrogenating desulfurization of heavy
oil through partial oxidn. in H2-**supercrit**. water)

IT 132-65-0, Dibenzothiophene
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(model compd.; catalytic hydrogenating desulfurization of heavy
oil through partial oxidn. in **supercrit**. water
exemplified by)

IT 7732-18-5, Water, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**supercrit**.; catalytic hydrogenating desulfurization of heavy
oil through partial oxidn. in **supercrit**. water)

L5 ANSWER 14 OF 18 HCAPLUS

AN 1995:899014 HCAPLUS

DN 123:290382

TI Hydrogenation and hardening of unsaturated fats, fatty acids or fatty
acid
esters

IN Tacke, Thomas; Wieland, Stefan; Panster, Peter; Bankmann, Martin;
Maegerlein, Hendrik

PA Degussa AG, Germany

SO Ger. Offen., 13 pp.
CODEN: GWXXBX

DT Patent

LA German

IC ICM C07C069-30
ICS C07C069-24; C07C067-303; C07C051-36; B01J023-72; C11C003-12

ICI C07M009-00

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 17, 23

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

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PI   DE 4405029        A1    19950824         DE 1994-4405029  19940217
     DE 4405029        C2    19960404
     CA 2182781        AA    19950824         CA 1995-2182781  19950209
     WO 9522591        A1    19950824         WO 1995-EP456    19950209
         W:  AM, AU, BB, BG, BR, BY, CA, CN, CZ, EE, FI, GE, HU, JP, KG, KP,
             KR, KZ, LK, LR, LT, LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SI,
             SK, TJ, TT, UA, US, UZ, VN
         RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT,
             LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE,
             SN, TD, TG
     AU 9518082        A1    19950904         AU 1995-18082    19950209
     AU 677900         B2    19970508
     EP 745116         A1    19961204         EP 1995-909690   19950209
     EP 745116         B1    19981118
         R:  BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, PT, SE
     CN 1140465        A     19970115         CN 1995-191599   19950209
     JP 09509440       T2    19970922         JP 1995-521550   19950209
     BR 9506806        A     19970930         BR 1995-6806     19950209
     ES 2126884        T3    19990401         ES 1995-909690   19950209
     US 5734070        A     19980331         US 1996-689836   19960814
PRAI DE 1994-4405029   A     19940217
     WO 1995-EP456     W     19950209
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AB   Edible unsatd. fats, fatty acids, or fatty acid esters are hydrogenated for hardening with H2 at using Pt-group metals, Ni, or Cu on spherical 0.1-3 mm supports (ceramic foam or metal honeycomb) with promoters at a temp. of 1-10 times the solvent crit. temp. (-120 to 250.degree.) and a pressure 0.8-6 times the crit. pressure (20-200 bar).

ST   fatty acid hydrogenation hardening

IT   Hydrogenation **catalysts**
   (Pt-group metals, Ni, Cu; hydrogenation and hardening of edible
unsatd.
   fats, fatty acids or fatty acid esters)

IT   Siloxanes and Silicones, uses
   RL: NUU (Nonbiological use, unclassified); USES (Uses)
   (condensation polymers, **catalyst** supports; hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)

IT   Fats and Glyceridic **oils**
   Fatty acids, preparation
   RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation)
   (edible unsatd.; hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)

IT   Hardening
   Hydrogenation
   (hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)

IT   Platinum-group metals
   RL: CAT (Catalyst use); USES (Uses)
   (hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)

IT   Fatty acids, preparation
   RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation)
   (esters, edible unsatd.; hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)

IT   1344-28-1, Alumina, uses   7440-44-0, Carbon, uses   7631-86-9, Silica, uses   9003-53-6, Polystyrene   13463-67-7, Titania, uses
   RL: CAT (Catalyst use); USES (Uses)
   (**catalyst** support; hydrogenation and hardening of edible

unsatd. fats, fatty acids or fatty acid esters)
IT 7440-02-0, **Nickel**, uses 7440-50-8, Copper, uses
RL: CAT (Catalyst use); USES (Uses)
(hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)
IT 544-35-4P, Linoleic acid ethyl ester
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation)
(hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)
IT 1333-74-0, Hydrogen, reactions
RL: RCT (Reactant)
(hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)
IT 74-98-6, Propane, uses 109-66-0, Pentane, uses 124-38-9, Carbon dioxide, uses 10024-97-2, Dinitrogen monoxide, uses 10102-43-9, Nitrogen monoxide, uses
RL: NUU (Nonbiological use, unclassified); USES (Uses)
(**supercrit.**; hydrogenation and hardening of edible unsatd. fats, fatty acids or fatty acid esters)

L5 ANSWER 15 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 1993:127921 HCAPLUS
DN 118:127921
TI Titania-zirconia mixed oxide aerogels as supports for hydrotreating **catalysts**
AU Weissman, J. G.; Ko, E. I.; Kaytal, S.
CS Texaco Inc., P.O. Box 509, Beacon, NY, USA
SO Appl. Catal., A (1993), 94(1), 45-59
CODEN: ACAGE4
DT Journal
LA English
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 49, 67
AB **Supercrit.** fluid (SFC) extn. was used to make aerogels of TiO_2, ZrO_2, and two TiO_2-ZrO_2 mixed oxides with surface areas 2-5 times greater than their conventionally prepd. equiv.; addnl. the mixed oxides had higher surface acidities than the two single component oxides. Heat treatments, either during **catalyst** prepn. or reactor testing, always resulted in small-to-significant decreases in surface areas in the aerogel-contg. samples. These samples were used as supports for Mo-Ni **catalysts** for the hydroprocessing of gas **oil** in a pilot-plant scale reactor. The high-ZrO_2 materials were unstable under reaction conditions and nearly inactive; in contrast, the high-TiO_2 **catalysts**, while somewhat unstable, were more active on a surface area basis than Al_2O_3 or conventional TiO_2 equivalent supported Mo-Ni **catalysts**. This improvement is attributed to properties inherent in the SCF-prepd. supports; these results also indicate that support acidity contributes to hydrotreating activity.
ST gas **oil** hydroprocessing **catalyst** support; molybdenum **nickel** hydroprocessing **catalyst**; titania zirconia support prepn **supercrit** extn
IT Gas **oils**
(hydroprocessing of, **catalyst** for, molybdenum-**nickel** on titania-zirconia aerogel as)
IT Aerogels
(titania-zirconia, support, for molybdenum-**nickel** **catalysts**, for hydroprocessing of gas **oil**)
IT Petroleum refining **catalysts**

(hydroprocessing, molybdenum-**nickel**, on titania-zirconia aerogel, for hydroprocessing of gas **oil**)
IT 1314-23-4P, Zirconia, uses
RL: PREP (Preparation)
(aerogel, contg. titania, prepn. of, by **supercrit**. fluid extn., as support for molybdenum-**nickel** hydroprocessing **catalyst**)
IT 13463-67-7P, Titania, uses
RL: PREP (Preparation)
(aerogel, contg. zirconia, prepn. of, by **supercrit**. fluid extn., as support for molybdenum **nickel** hydroprocessing **catalyst**)
IT 7440-02-0, **Nickel**, uses
RL: CAT (Catalyst use); USES (Uses)
(**catalyst**, contg. molybdenum, on titania-zirconia aerogel, for hydroprocessing of gas **oil**)
IT 7439-98-7, Molybdenum, uses
RL: CAT (Catalyst use); USES (Uses)
(**catalyst**, contg. **nickel**, on titania-zirconia aerogel, for hydroprocessing of gas **oil**)

L5 ANSWER 16 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 1990:182671 HCAPLUS
DN 112:182671
TI Chemical structure and susceptibility to hydrogenation of heavy coal derived liquids
AU Surygala, J.; Sliwka, E.
CS Inst. Chem. Tech. Pet. Coal, Tech. Univ. Wroclaw, Wroclaw, 50-344, Pol.
SO Proc. - Annu. Int. Pittsburgh Coal Conf. (1989), 6th(2), 711-18
CODEN: PICNE4
DT Journal
LA English
CC 51-21 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 67
AB Six coal liqs., 3 flash pyrolysis tars, 2 **supercrit**. exts., and a hydrogenated anthracene **oil** ext., were analyzed for their compn., and a no. of **catalysts** for the hydroprocessing of these liqs. were evaluated. The brown-coal exts. and tars had relative high concns. of H (8-9%) and O (8-12%), but their arom. C concns. were relatively low (0.4-0.5). The coal exts. had less H (6-7%) and O (4-5%) but more arom. C (0.7-0.8). A Co-Mo/Al2O3 **catalyst** was suitable for brown-coal liq. hydroprocessing, but Ni-Mo/Al2O3 and Ni-Co-Mo/Al2O3 **catalysts** were more suitable for the coal liqs.
ST coal brown liq compn hydroprocessing; ext pyrolysis tar **catalyst** hydroprocessing
IT Coal liquids
(brown, hydroprocessing of, **catalysts** for)
IT Coal liquids
(exts., hydroprocessing of, **catalysts** for)
IT Petroleum refining **catalysts**
(hydroprocessing, of coal liqs., evaluation of)
IT Coal liquids
(pyrolysis **oils**, hydroprocessing of, **catalysts** for)
IT 7439-98-7, Molybdenum, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(**catalyst**, contg. cobalt and **nickel** and alumina, for coal liq. hydroprocessing)
IT 7440-48-4, Cobalt, uses and miscellaneous

RL: CAT (Catalyst use); USES (Uses)
(**catalyst,** contg. molybdenum and **nickel** and
alumina, for coal liq. hydroprocessing)
IT 7440-02-0, **Nickel,** uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(**catalysts,** contg. cobalt and molybdenum and alumina, for
coal liq. hydroprocessing)
IT 1317-39-1, Cuprous oxide, uses and miscellaneous 7439-89-6, Iron, uses
and miscellaneous 12627-71-3, Tungsten sulfide
RL: CAT (Catalyst use); USES (Uses)
(**catalysts,** for coal liq. hydroprocessing)

L5 ANSWER 17 OF 18 HCAPLUS COPYRIGHT 2001 ACS
AN 1986:227641 HCAPLUS
DN 104:227641
TI Selective extraction of hydrocarbons from asphaltic petroleum **oils**
IN Yan, Tsoung Yuan; Audeh, Costandi A.
PA Mobil Oil Corp., USA
SO Can., 18 pp.
CODEN: CAXXA4
DT Patent
LA English
IC ICM C10G021-00
CC 51-10 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CA 1198996	A1	19860107	CA 1982-407675	19820720

AB Petroleum residues are deasphalted by extn. with a low mol. wt. org.
solvent (crit. temp. .gtoreq.200.degree.C) at or above the crit. temp.
and
crit. pressure of the solvent. The asphaltenes and metal contaminants
are
agglomerated and sepd.; the ext. is then fractionated to recover a
deasphalted **oil** and the solvent. **Catalysts** can be
added during the extn. to improve the deasphalted **oil** yield and
to reduce metal content. Thus, a vacuum residue (contg. 22 ppm Ni and
220
ppm V) was extd. with a catalytically cracked gasoline at 725.degree.F
and
650 psig to form an asphaltic heavy phase and a deasphalted **oil**
-solvent ext. phase; the ext. phase was sepd. and distd. to recover the
deasphalted **oil** and the sovent. The product contained 76 wt.%
deasphalted **oil** with 2 ppm Ni and 12 ppm V.
ST petroleum refining deasphalting solvent extn; gasoline extn petroleum
residue deasphalting; **supercrit** deasphalting demetalation
petroleum residue; asphaltene demetalation demetalation petroleum
residue;
nickel removal demetalation petroleum residue; vanadium removal
demetalation petroleum residue
IT Gasoline
RL: USES (Uses)
(catalytically cracked, **supercrit.** extn. solvent, for
deasphalting and demetalation of petroleum residues)
IT Asphaltenes
RL: REM (Removal or disposal); PROC (Process)
(removal of, from petroleum refining residues, by **supercrit.**
extn. with catalytically cracked gasoline)

IT Solvent naphtha
(**supercrit**. extn. of, for deasphalting and demetalation of petroleum residues)
IT Petroleum products
(cycle **oils**, **supercrit**. extn. solvents, for deasphalting and demetalation of petroleum residues)
IT Petroleum refining
(deasphalting-demetalation, of vacuum residues, by extn. with **supercrit**. solvents)
IT Petroleum refining residues
(vacuum distn., deasphalting and demetalation of, by **supercrit** . extn. with catalytically cracked gasoline)
IT 7440-02-0, uses and miscellaneous 7440-62-2, uses and miscellaneous
RL: REM (Removal or disposal); PROC (Process)
(removal of, from petroleum refining residues, by **supercrit**. extn. with catalytically cracked gasoline)
IT 67-56-1, uses and miscellaneous 109-66-0, uses and miscellaneous
RL: USES (Uses)
(**supercrit**. extn. solvent, for deasphalting and demetalation of petroleum residues)
IT 71-43-2, uses and miscellaneous 108-88-3, uses and miscellaneous
RL: USES (Uses)
(**supercrit**. extn. solvents, for deasphalting and demetalation of petroleum residues)

L5 ANSWER 18 OF 18 HCAPLUS
AN 1983:542956 HCAPLUS
DN 99:142956
TI Hydrotreating **supercritical** solvent extracts in the presence of alkane extractants
IN Low, Jim Y.
PA Phillips Petroleum Co. , USA
SO U.S., 4 pp.
CODEN: USXXAM
DT Patent
LA English
IC C10G001-04; C10G021-14
NCL 208011000LE
CC 51-13 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 67
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4397736	A	19830809	US 1981-249804	19810401
	US 32120	E	19860422	US 1984-572713	19840120
PRAI	US 1981-249804		19810401		

AB Hydrocarbons are recovered from naturally-occurring carbonaceous materials of low org. C content (i.e., **oil** shale and/or tar sand) by contacting the materials under **supercrit**. conditions with a mixt. of structurally analogous hydrocarbon solvents. The solvents comprise .gtoreq.1 arom. solvent and .gtoreq.1 cycloaliph. solvent, with the latter being structurally analogous to the arom. solvent and comprising 5-10 wt.% of the total solvent wt. The carbonaceous material can be hydrotreated in the presence of the solvent mixt. either during or after the extn. step. Thus, Paraho shale **oil** (1 wt. part) was dissolved in 4 wt. parts solvent and hydrotreated at 850 .degree.F, 1.6 h-1 liq. space velocity, and 300 h-1 H space velocity over Mo-Ni. When

PhMe [108-88-3] was the solvent, .apprx.5-7% of the PhMe was hydrogenated
to methylcyclohexane (I) [108-87-2]. When the solvent comprised PhMe contg. 5% I, very little solvent was hydrogenated, H consumption was substantially reduced, and conversion was increased.

ST shale **oil** hydrotreating **supercrit** solvent; toluene **supercrit** solvent hydrotreating **oil**; methylcyclohexane **supercrit** solvent hydrotreating **oil**; molybdenum **nickel catalyst** hydrotreating **oil**; **oil** shale sand **supercrit** extn

IT **Oil** sand
Oil shale
RL: PROC (Process)
(extn. of, by **supercrit**. solvent mixts.)

IT Petroleum recovery
(from **oil** sand and **oil** shale, by extn. with **supercrit**. solvent mixts.)

IT Petroleum refining **catalysts**
(hydrorefining, molybdenum-**nickel**, for shale **oils** in **supercrit**. mixed solvents)

IT Petroleum refining
(hydrorefining, of shale **oils** in mixed solvents under **supercrit**. conditions)

IT 7440-02-0, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(**catalysts**, contg. molybdenum for hydrorefining of shale **oils** in **supercrit**. mixed solvents)

IT 7439-98-7, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(**catalysts**, contg. **nickel** for hydrorefining of shale **oils** in **supercrit**. mixed solvents)

IT 71-43-2, uses and miscellaneous 108-87-2 108-88-3, uses and miscellaneous 110-82-7, uses and miscellaneous
RL: USES (Uses)
(solvents contg., shale **oil** hydrorefining in presence of, under **supercrit**. conditions)